

Unit Planning Guide: Grade 9 Unit 3 of 8

Unit Title: Statistics	Pacing (Duration of Unit): 5 weeks
Grade: 9	Buffer Day(s):

Desired Results

Transfer Goals

Students will be able to independently use their learning to:

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

Standards (Priority Standards in bold):

- N-Q.1 Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
- N-Q.2 Define appropriate quantities for the purpose of descriptive modeling.
- N-Q.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
 - MA.3.a. Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements. Identify significant figures in recorded measures and computed values based on the context given and the precision of the tools used to measure.
- **S-ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).**
- **S-ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.**
- **S-ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).**

WiDA Standards (ELL)

Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting

Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**

In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.)

<ul style="list-style-type: none"> • S-ID.4 Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve. • S-ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. • S-ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. <ul style="list-style-type: none"> a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association. • S-ID.7 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data • S-ID.8 Compute (using technology) and interpret the correlation coefficient of a linear fit. • S-ID.9 Distinguish between correlation and causation. 	<p>appropriate language function expectations and scaffolds or supports.</p> <p>To be completed in collaboration with the ELL Department</p>
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Meaning (*Mostly assessed through Performance Tasks/Assessments)

Big Ideas:

- Build to pictorial representations of the data given
- Analyze data with center, shape, and spread
- Fit a model to the data and use model to predict the dependent variable

Essential Questions:

- How do we represent the numerical data points?
- How do we compare two sets of data?
- How do we interpret the association of two variables?

Acquisition (*Mostly assessed through traditional summative assessments)

Knowledge:

Students will know ...

- Dot plots, histograms, stem and leaf, and box plots
- Measures of center (mean, median)
- Measures of spread (range, inter-quartile range, and standard deviation)
- Measures of shape (mode, skew)
- The impact of outliers
- Line of best fit
- The strength and applications of the line of best fit
- “correlation does not prove causation”

Skills:

Students will be skilled at:

- Developing and interpreting data pictures
- Calculate measures of center, shape, spread, and outliers
- Comparing and analyzing two sets of data
- Evaluating the best measure based on the information needed
- Identify and interpret line of best fit
- Interpret the strength of the line of best fit using residuals